

U.S.S.N. 10/780,301

Listing of Claims

1. (Currently Amended) In a vehicle having a powertrain and an anti-lock braking system (ABS), a method of controlling the ABS, comprising:

accumulating responses of the ABS to a series of sudden braking events;

correlating the ABS responses to one or more natural vibration frequencies of the vehicle; and,

selecting an ABS response to a brake request based on the correlated ABS responses in order to avoid exciting the powertrain at the one or more natural vibration frequencies, wherein the selecting step includes selecting a nominal ABS response and altering the nominal ABS response by either delaying the nominal ABS response for a selected period of time, or accelerating the nominal ABS response.

2. (Currently Amended) The method of claim 1, wherein the correlating step includes determining which of the accumulated responses excite the powertrain at the one or more natural vibration frequencies.

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3. (Previously Presented) The method of claim 2, wherein the accumulating step includes storing the ABS responses in a memory on-board the vehicle.

4. (Currently Amended) The method of claim 1, wherein the correlating step includes determining which of the accumulated ABS responses produces reactive torque in the powertrain at frequencies that are near the one or more natural vibration frequencies.

5. (Cancelled)

6. (Cancelled)

7. (Currently Amended) The method of claim ~~6~~ 1, wherein when the nominal ABS response is altered by accelerating the nominal ABS response, the nominal ABS response comprises pulsing brakes on the vehicle and altering the rate at which the brakes are pulsed.

8. (Currently Amended) A method of controlling an anti-lock braking system (ABS) to avoid exciting a natural vibration frequency of a vehicle, comprising:

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determining the response of the ABS to a series of sudden braking events;

developing a set of vehicle natural vibration frequencies that may be excited by the ABS using the response of the ABS to the series of braking events;

selecting an ABS response to a driving event requiring actuation of the ABS;

determining whether the selected ABS response may excite any of the frequencies in the developed set; and

altering the selected ABS response to avoid exciting any of the frequencies in the developed set.

9. (Currently Amended) The method of claim 8, wherein the developing step is performed by:

determining the natural vibration frequencies of the vehicle; and,

selecting the determined natural vibration frequencies that are excited by the ABS.

10. (Currently Amended) The method of claim 9, wherein the natural vibration frequencies are selected by correlating the ABS responses with the determined natural vibration

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frequencies to thereby establish which of the natural vibration frequencies are excited by the ABS responses.

11. (Previously Presented) The method of claim 8, further comprising the step of storing the response of the ABS to the series of sudden braking events in a memory.

12. (Previously Presented) The method of claim 8, wherein the altering step includes delaying the execution of the selected ABS response.

13. (Previously Presented) The method of claim 8, wherein the altering step comprises accelerating the execution of the selected ABS response.

14. (Previously Presented) The method of claim 8, wherein the altering step comprises altering the rate at which the ABS pulses the brakes of the vehicle.

15. (Currently Amended) A system for controlling an anti-lock braking system (ABS) to avoid exciting a natural vibration frequency of a vehicle, comprising:

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computer memory having a stored set of ABS responses to past sudden braking events requiring actuation of the vehicle's ABS; and,

a set of programmed instructions for comparing a proposed ABS response with the ABS responses stored in the memory, wherein the programmed instructions include instructions for accelerating the proposed ABS response, delaying the nominal ABS response for a selected period of time, or altering the rate at which the brakes are pulsed and for altering the proposed response based on the comparison to avoid an ABS responsive that may excite a vehicle natural vibration frequency.

16. (Cancelled)

17. (Currently Amended) The system of claim 15, including a data input device for transferring vehicle natural vibration frequencies to the memory.

18. (Currently Amended) A method of controlling an anti-lock braking system (ABS) to avoid exciting a natural vibration frequency of a vehicle, comprising:

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storing responses of the ABS to a series of past sudden braking events that resulted in exciting a vehicle natural vibration frequency,

monitoring the response of the ABS to a series of braking events, wherein the monitoring step includes accumulating and recording brake pressures and brake pulsing frequencies;

selecting a proposed ABS response to a driving event requiring actuation of the ABS; and,

altering the proposed ABS response based on the stored ABS responses.

19. (Previously Presented) The method of claim 18, wherein the ABS responses to the series of past braking events are stored in a memory on-board the vehicle.

20. (Previously Presented) The method of claim 18, wherein the storing step includes storing a plurality of combinations of brake pressures and braking pulsing frequencies.

21. (Previously Presented) The method of claim 20, including the step of correlating responses of the ABS to

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the series of past braking events with natural vehicle frequencies.

22. (Cancelled)

23. (Cancelled)

24. (Currently Amended) The method of claim ~~23~~ 18, wherein altering the proposed ABS response includes increasing the brake pulsing frequency.